

## ABSTRACT

According to a first embodiment the invention provides, for achieving fast multi-wavelength scanning in an acousto-optical deflector based confocal scanning microscope, dynamically adjusting an optical path of said an acousto-optical deflector based confocal microscope by mechanical means in accordance with a selected wavelength of a laser light beam, to compensate for astigmatism and collimation changes due to the change in input beam wavelength and modifying detected images of an object by electronic means to maintain alignment of the scan lines of the image at all wavelengths. According to a second embodiment the invention provides, for achieving fast multi-wavelength scanning in an acousto-optical deflector based laser confocal scanning microscope, dynamically adjusting drive parameters of the acousto-optical deflector in accordance with the selected wavelength of the input laser light beams, to maintain alignment of the scan lines of the image at all wavelengths. According to a third embodiment the invention provides, for achieving fast multi-wavelength scanning in an acousto-optical deflector based laser confocal scanning microscope dynamically adjusting drive parameters of the acousto-optical deflector in accordance with the selected wavelength of the input laser light beams, to maintain alignment of the scan lines of the image at all wavelengths, and mechanically pivoting the acousto-optical deflector about its central axis to compensate for the different deflection angles and ranges of the used illumination wavelengths.